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UNION CARBIDE NUCLEAR COMPANY • DIVISION OF UNION CARBIDE CORPORATION

RHTG-20,462

POST OFFICE BOX 1223, PADUCAH, KENTUCKY

February 1, 1963

KYA-416

Box 42

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United States Atomic Energy Commission
Post Office Box 1213
Paducah, Kentucky

Attention: Mr. B. N. Stiller, Manager
Paducah Area Office

Subject: Plutonium Content of Depleted Uranium

Gentlemen:

In accordance with a recent request from your office, we have examined both current Paducah cascade tails UF_6 and a random sample of depleted uranium metal for plutonium content and alpha activity. The cascade tails UF_6 was sampled on January 16, 1963, and had a U^{235} content of 0.3216 wt. %. The uranium metal sample was from a derby produced in 1957 and had a U^{235} assay of 0.2286 wt. %. Both the UF_6 and uranium metal samples had less than one part per billion plutonium on a uranium basis.

The gross alpha activities of the UF_6 and uranium metal samples were calculated using the isotopic abundance of the four isotopes present, U^{234} , U^{235} , U^{238} and U^{236} . A comparison of the measured gross alpha activities with those calculated show no significant difference and indicate the absence of any significant concentration of plutonium. The alpha activity values obtained were as follow:

	UF_6	U Metal
Calculated	491 ± 30 cpm/mg U	443 ± 30 cpm/mg U
Actual	487 ± 11 cpm/mg U	438 ± 11 cpm/mg U

The data above indicate that there is no problem from plutonium contamination of either depleted UF_6 or uranium metal. The specification for plutonium in UO_3 produced from spent reactor fuel elements is 10 parts per billion on a uranium basis.

Very truly yours,

UNION CARBIDE NUCLEAR COMPANY

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J. F. Winkel
For R. A. Winkel
Paducah Plant Superintendent
FEB 1 21963

RAW/DWL/tp

cc: C. E. Center
C. E. Larson
J. P. Murray

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Classification Changed to UNCLASSIFIED
By Authority of CG-PGD-4
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